



Nathan Schumaker <[REDACTED]>

HexSim Scenario "Beta" Results

5 messages

Nathan Schumaker <[REDACTED]> **Tue, Aug 10, 2010 at 8:32 AM**

To: Bob Anthony <robert.anthony@oregonstate.edu>, Brendan White <Brendan_White@fws.gov>, Brian Woodbridge <Brian_Woodbridge@fws.gov>, Bruce Marcot <brucem@spiritone.com>, Craig Ducey <Craig_Ducey@or.blm.gov>, Dave LaPlante <dave@nrg-gis.com>, Eric Greenquist <Eric_Greenquist@blm.gov>, Jeffrey Dunk <Jeffrey.Dunk@humboldt.edu>, Jim Thrailkill <Jim_Thrailkill@fws.gov>, Katie Dugger <katie.dugger@orst.edu>, Marty Raphael <mraphael@fs.fed.us>, Nathan Schumaker <[REDACTED]>, Ray Davis <rjdavis@fs.fed.us>

Hello All,

Jeff put together a new set of HexSim resource targets yesterday. Some changed from my previous "Alpha" scenario, and some did not. See the attached file "Resource Targets.pdf". It has the resource targets used in the "Baseline", "Alpha", and "Beta" scenarios. Beta, the most recent, is on the third page.

In this case, I have only run scenarios Beta_A, Beta_C, and Beta_E. This saved me a little time, and results in less material for you to wade through.

For the Beta scenarios, I have performed 5 replicate simulations. See the attached file "Scenario Beta Results.pdf". I have clipped the overall population size data to year 10. I have clipped the Regional and DSA trend data to year 25. This clipping limits the range of the Y-axes, so it makes the plots a little easier to read.

That's it for now... Let me know what you think of these trends...

Nathan

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Nathan Schumaker

[REDACTED]

(541) 754-4658

2 attachments

**Resource Targets.pdf**

54K

**Scenario Beta Results.pdf**

3573K

Anthony, Robert G - FW <robert.anthony@oregonstate.edu>**Tue, Aug 10, 2010 at 10:47 AM**

To: Nathan Schumaker <[REDACTED]>, Brendan White <Brendan_White@fws.gov>, Brian Woodbridge <Brian_Woodbridge@fws.gov>, Bruce Marcot <brucem@spiritone.com>, Craig Ducey <Craig_Ducey@or.blm.gov>, Dave LaPlante <dave@nrg-gis.com>, Eric Greenquist <Eric_Greenquist@blm.gov>, Jeffrey Dunk <Jeffrey.Dunk@humboldt.edu>, Jim Thrailkill <Jim_Thrailkill@fws.gov>, Katie Dugger

<katie.dugger@orst.edu>, Marty Raphael <mraphael@fs.fed.us>, Ray Davis <rjdavis@fs.fed.us>

Nathan:

You have given us a lot to look at and I am feeling a bit overwhelmed with all of the figures but I will give you some general impressions and thoughts for what they are worth. First, I think the beta scaling for the most recent runs are getting close to the relative resource needs of owls among the different zones/provinces; however, there still some of the results that do not compare well with the recent meta-analysis results of demographic rates. First, the Oregon coast range and Olympic zones always go extinct as do the OLY, OCR< and TYE DSAs. While these results for the Olympic agree with the latest demographic analysis, results for the Oregon coast range zone and the TYE and OCR DSAs do not. In fact, the TYE DSA has had the most stable population in the last two meta-analyses. Second, populations in the west Cascades zones perform better than those in the east Cascades, which is contrary to the meta-analyses. To go along with this, we know that the east Cascades provinces are quite narrow and provide less habitat for owls compared to the west Cascades provinces, so this is another discrepancy. As I have commented before the Puget/Willamette Zone seems meaningless to me because there is very little owl habitat and federal land in these zones, which results in pretty variable population responses. At this point, I think we need to refine the most recent beta scaling to rectify some of the above issues if possible. It is possible that some of the discrepancies, like the east-west Cascades differences, will disappear once the modeling is joined with MaxEnt.

Thanks again for all of your efforts with the HexSim modeling. You have certainly gone far beyond everyone's expectations.

Bob

From: Nathan Schumaker [mailto:]

Sent: Tuesday, August 10, 2010 8:33 AM

To: Anthony, Robert G - FW; Brendan White; Brian Woodbridge; Bruce Marcot; Craig Ducey; Dave LaPlante; Eric Greenquist; Jeffrey Dunk; Jim Thrailkill; Katie Dugger; Marty Raphael; Nathan Schumaker; Ray Davis

Subject: HexSim Scenario "Beta" Results

[Quoted text hidden]

Jeffrey Dunk <Jeffrey.Dunk@humboldt.edu>

Tue, Aug 10, 2010 at 11:52 AM

To: Nathan Schumaker < >, Bob Anthony <robert.anthony@oregonstate.edu>, Brian Woodbridge <Brian_Woodbridge@fws.gov>, Dave LaPlante <dave@nrg-gis.com>, Katie Dugger <katie.dugger@orst.edu>

Hi All:

I think the most recent stuff Nathan sent out is very, very close being right on for the production HexSim runs. I appreciate being able to see the variation from the multiple replicates too! I've decided to send this e-mail to a smaller group for the time being, with the hopes that we can get buy-

in among ourselves and then go to the larger group. As I mentioned in yesterday afternoon's e-mail, I've been looking over the lambda values from Forsman et al. (in press), in conjunction with the HexSim output within both modeling regions and DSAs. Yesterday Dave LaPlante and I began evaluating the MaxEnt Po values (relative habitat suitability – RHS) within DSAs and compared those to the modeling regions the DSAs were within. This was done in order to evaluate the degree to which we might expect overall trends in NSO performance (in HexSim runs) in DSAs to be similar to those in the modeling regions which the DSA is a part of. To some degree this comes down to looking at whether DSAs are somewhat “an island of good, high RHS, area in a sea of poorer RHS.” I've attached a pdf file (of a spreadsheet) which shows some descriptive statistics of what we found.

First off, several DSAs had portions of their area in more than one modeling region (see, for example that Cle Elum was in both the ECN and WCC) – and we made separate comparisons for each portion. We also included the Warm Springs DSA – even though it wasn't part of the recent meta-analysis. In all, we had 22 different DSA by modeling region comparisons. Of those 22 comparisons, in 20 cases the DSA had a greater mean RHS than did the associated modeling region that it was a part of. Note, for these comparisons we DID NOT clip out the DSA's contribution to the mean or median values of the modeling regions they were a part of (if we'd done that the numbers would have shown more dramatic differences). On average modeling regions had 71.9% of the RHS that DSAs did. If we evaluate the median RHS values rather than the means, modeling regions had, on average, 58.5% of the median RHS value that DSAs did. In 10 of the 22 cases, modeling regions had less than 60% of the RHS value of DSAs. We can also see that variation in RHS values was much less, in general, in DSAs than in modeling regions. Overall, DSAs represented about 21.3% of the TOTAL RHS value (summation of RHS values at each pixel within DSAs/summation of RHS values at each pixel within the entire NSO range) – even though these DSAs represent about 10% of the area. My point is that in general DSAs are of much higher quality than the modeling regions they are a part of.

I just read Bob's e-mail. The Coast Ranges DSA is split between the ORC and NCO modeling regions. The ORC modeling region has a mean RHS value that is 59.7% that of the Coast Ranges DSA (that portion that is within the ORC). The ORC modeling region has a mean RHS value that is 57.2% that of the Tyee DSA. The summation of RHS values in the Coast Ranges (again, that portion in the ORC modeling region) and Tyee DSAs represents 57% of the total RHS within the entire ORC modeling region. I don't have the information at my finger tips, but I'm guessing that those two areas do not represent 57% of the total area of the ORC. To me, because of the large disparity in RHS value between the DSAs in this modeling region, it is not too surprising that the HexSim runs are showing the population going down in general – even if they are stable in one of the DSAs (Tyee).

For the East Cascades South vs West Cascades South – here's my take...the WCS overall has the most cumulative habitat value of any of the modeling regions (15.3% of the total range-wide RHS value), whereas the ECS has 3.7% of the cumulative range-wide RHS value. That portion of the South Cascades DSA that is within the ECS modeling region has a mean RHS value that is nearly twice the size of the ECS mean RHS value (ECS region mean = 14.798, South Cascades DSA mean = 27.835). For the WCS, the only DSA within it is the HJ Andrews DSA. The mean WCS RHS value is 76.4% that of the HJA. Beyond the magnitude of their differences, both the HJA and WCS mean RHS values are very large (~42 and 32.5, respectively). Thus, the fact that HexSim predicts the owl population in the WCS to do better than that of the ECS does not seem surprising.

After evaluating this and trying to reconcile the various HexSim runs (by scaling factors and scenarios

8/11/2010

Gmail - HexSim Scenario "Beta" Results

– love the names by the way☺) I think we're very close. I do not mean any of my comments or thoughts to come off as being argumentative, and hope they are understood in the context of trying to find the right mix of scaling factors and resource values for the HexSim runs such that they represent a reasonable approximation of the current circumstances. I think I'd be happy to go ahead with "Scenario Beta – 500", but I'm certainly open to other ideas or iterations.

Lastly, and I know this can't be a primary determining factor in anything – but Nathan is going on a well-deserved vacation on Friday. It would be ideal if we could have the parameterization of HexSim completely done before he left, so we could begin some of the production HexSim runs (that Craig will be running).

Thanks for humoring me by reading all of this!

Take care,

Jeff

From: Nathan Schumaker [mailto:]

Sent: Tuesday, August 10, 2010 8:33 AM

To: Bob Anthony; Brendan White; Brian Woodbridge; Bruce Marcot; Craig Ducey; Dave LaPlante; Eric Greenquist; Jeffrey Dunk; Jim Thrailkill; Katie Dugger; Marty Raphael; Nathan Schumaker; Ray Davis

Subject: HexSim Scenario "Beta" Results

Hello All,

[Quoted text hidden]



Descriptive stats of Mod Regions and DSA RHS values (10 Aug 2010).pdf

39K

Anthony, Robert G - FW <robert.anthony@oregonstate.edu>

Tue, Aug 10, 2010 at 3:08 PM

To: Jeffrey Dunk <Jeffrey.Dunk@humboldt.edu>, Nathan Schumaker < >, Brian Woodbridge <Brian_Woodbridge@fws.gov>, Dave LaPlante <dave@nrg-gis.com>, Katie Dugger <katie.dugger@orst.edu>

Jeff:

Even though I studied your table closely, it is not apparent by the column headings what you are talking about in this email message. For example, what do the column headings MR/DSA, DSA CV*100, Med. Regions CV* 100 refer to or represent? Also, it is very difficult to crosswalk the table

between modeling regions and DSA names, and some of these crosswalks appear to be incorrect. For example, the Cle Elum DSA is in the eastern Cascades, not western Cascades; the Oregon Coast Range DSA is in the Oregon Coast range, not North coast/Olympics; the south Cascades DSA is in the western Cascades south zone, not the eastern Cascades and KLE zones; the Wenatchee DSA is in the eastern Cascades, not the western Cascades; and the HJ Andrews DSA is in the western Cascades central, not western Cascades southern zone. In addition, there were no data for the WEN and Warm Springs DSAs in the latest meta-analysis, so we don't have recent estimates of lambda to compare to. How do they figure into your table of comparisons? I think what I am seeing is a very challenging crosswalk between DSA and modeling zones for making comparisons between recent demographic performance in the meta-analyses and population performance in the modeling zones. In other words, the modeling zones should have been delineated differently if this comparison was deemed important.

I still contend that the modeling is not representing the Olympic Cascades and the Oregon Coast Ranges and their representative DSAs the way we have seen those populations perform in the latest meta-analysis and that could be an important issue in the modeling results being accepted by other scientists. For example, the RHS for the Olympic DSA is 44.7 but the RHS for that zone is 14.4, so it is no wonder the modeling gives a different result. Similarly, the RHS for Tyee DSA is 31.6 but that for the zone is 18.1. Also, your premise that HexSim predicts that the western Cascades will do better than the eastern Cascades is not supported by the results that Nathan sent this morning. I see just the opposite of that.

Anyway, I need more clarity and definitions with the table you provided and the crosswalk between DSAs and modeling zones needs to be modified before I can follow your reasoning. At this point, I believe additional refinement in the scaling and delineation of the modeling zones is in order before you and Nathan are ready to turn the modeling over to Craig. Of course, I am only one of several members of this group, so I will step aside if others are not in agreement.

I am not trying to be argumentative here, just searching for more clarity and good comparisons between the recent meta-analysis results and the modeling results.

Cheers!

Bob

From: Jeffrey Dunk [mailto:Jeffrey.Dunk@humboldt.edu]

Sent: Tuesday, August 10, 2010 11:53 AM

To: 'Nathan Schumaker'; Anthony, Robert G - FW; 'Brian Woodbridge'; 'Dave LaPlante'; 'Katie Dugger'

Subject: RE: HexSim Scenario "Beta" Results

[Quoted text hidden]

Jeffrey Dunk <Jeffrey.Dunk@humboldt.edu>

Tue, Aug 10, 2010 at 4:21 PM

To: "Anthony, Robert G - FW" <robert.anthony@oregonstate.edu>, Nathan Schumaker <[REDACTED]>, Brian Woodbridge <Brian_Woodbridge@fws.gov>, Dave LaPlante <dave@nrg-gis.com>, Katie Dugger <katie.dugger@orst.edu>

Hi:

I've attached a file with my responses to your (Bob's) comments. How about we try a scaling factor of 1.0 for both ORC and ECS and see what we think of those runs? Perhaps we can or should schedule a conference call for sometime tomorrow or Thursday to try to hash things out?

Thanks,

Jeff

From: Anthony, Robert G - FW [mailto:robert.anthony@oregonstate.edu]

Sent: Tuesday, August 10, 2010 3:08 PM

To: 'Jeffrey Dunk'; 'Nathan Schumaker'; 'Brian Woodbridge'; 'Dave LaPlante'; 'Katie Dugger'

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Responses to Bob Anthony re HexSim _10 Aug 2010_.pdf

59K

DSA Name	Mod Region	DSA (RHS values)			Modeling Regions (RHS values)			MR/DSA	MR/DSA	DSAs	Mod. Regions
		Mean	STD	Median	Mean	STD	Median	Mean	Median	CV*100	CV*100
Cle Elum	ECN	27.804	22.245	24	15.581	19.317	8	0.5604	0.3333	80.007	123.972
Cle Elum	WCC	22.727	22.595	15	15.022	20.663	3	0.6610	0.2000	99.421	137.552
Coast Ranges	NCO	27.431	19.154	25	14.408	18.958	6	0.5252	0.2400	69.824	131.583
Coast Ranges	ORC	30.323	19.786	28	18.101	20.180	10	0.5969	0.3571	65.249	111.489
HJ Andrews	WCS	42.708	16.029	45	32.623	20.421	34	0.7639	0.7556	37.532	62.598
Hoopa	KLW	34.219	18.566	34	30.180	20.090	29	0.8820	0.8529	54.256	66.569
Klamath	KLE	33.310	18.493	34	22.653	21.579	17	0.6801	0.5000	55.518	95.259
Klamath	KLW	37.138	19.043	37	30.180	20.090	29	0.8126	0.7838	51.276	66.569
Marin	RDC	19.672	16.289	18	27.453	22.201	27	1.3956	1.5000	82.806	80.867
NW California	KLE	23.585	18.756	20	22.653	21.579	17	0.9605	0.8500	79.525	95.259
NW California	KLW	34.102	20.841	34	30.180	20.090	29	0.8850	0.8529	61.113	66.569
NW California	ICC	49.117	18.553	50	22.629	21.725	18	0.4607	0.3600	37.772	96.005
NW California	RDC	41.636	19.500	43	27.453	22.201	27	0.6594	0.6279	46.834	80.867
Olympic	NCO	44.741	21.917	46	14.408	18.958	6	0.3220	0.1304	48.987	131.583
Rainier	WCC	18.643	22.735	7	15.022	20.663	3	0.8058	0.4286	121.950	137.552
Simpson	RDC	33.250	19.632	34	27.453	22.201	27	0.8257	0.7941	59.044	80.867
South Cascades	ECS	27.835	22.807	22	14.798	18.938	7	0.5316	0.3182	81.935	127.979
South Cascades	KLE	39.148	19.770	39	22.653	21.579	17	0.5786	0.4359	50.501	95.259
Tyee	ORC	31.639	23.152	29	18.101	20.180	10	0.5721	0.3448	73.175	111.489
Warm Springs	ECN	27.897	19.999	23	15.581	19.317	8	0.5585	0.3478	71.691	123.972
Wenatchee	ECN	27.254	22.892	23	15.581	19.317	8	0.5717	0.3478	83.995	123.972
Wenatchee	WCC	12.326	18.873	2	15.022	20.663	3	1.2188	1.5000	153.118	137.552
							Mean	0.719	0.585	71.160	103.881

Hi Bob et al.:

My responses are in black and bold beneath Bob's comments/questions.

Jeff:

Even though I studied your table closely, it is not apparent by the column headings what you are talking about in this email message. For example, what do the column headings MR/DSA, DSA CV*100, Med. Regions CV* 100 refer to or represent?

MR/DSA is the modeling region value divided by the DSA value

DSA CV*100 is the coefficient of variation (times 100) for the DSA

Mod. Region CV *100 is the modeling region's coefficient of variation (times 100).

Also, it is very difficult to crosswalk the table between modeling regions and DSA names, and some of these crosswalks appear to be incorrect. For example, the Cle Elum DSA is in the eastern Cascades, not western Cascades;

Remember that our modeling regions aren't the same as the Provinces used by Ray and Katie – so some of the boundaries are a bit different.

The Cle Elum DSA has a relatively small portion of its area in the WCC and most of its area in the ECN

the Oregon Coast Range DSA is in the Oregon Coast range, not North coast/Olympics;

The Oregon Coast Range DSA is largely in the ORC, but for our modeling the NCO (North Coast Olympics modeling region) goes down into Oregon quite a ways.

the south Cascades DSA is in the western Cascades south zone, not the eastern Cascades and KLE zones;

Again, the modeling regions we are using show that the South Cascades DSA overlaps the East Cascades South and Klamath East regions.

the Wenatchee DSA is in the eastern Cascades, not the western Cascades;

Same answer as for above

and the HJ Andrews DSA is in the western Cascades central, not western Cascades southern zone.

Same answer as for above

In addition, there were no data for the WEN and Warm Springs DSAs in the latest meta-analysis, so we don't have recent estimates of lambda to compare to.

We realize that – and I wasn't making comparisons to lambda with these area, just the differences between the DSAs and modeling regions they are a part of.

How do they figure into your table of comparisons?

They contribute to the mean differences I expressed, but otherwise very little. If we remove the Wenatchee, Warm Springs, and Marin study areas, the modeling regions have 67.1% of the RHS value compared to the DSAs (instead of the 71.9% when they're all included).

I think what I am seeing is a very challenging crosswalk between DSA and modeling zones for making comparisons between recent demographic performance in the meta-analyses and population performance in the modeling zones. In other words, the modeling zones should have been delineated differently if this comparison was deemed important.

The modeling regions are the ones that we used to generate the underlying relative habitat suitability map (the MaxEnt output) used for Zonation and now for HexSim. The decisions on boundaries and number of modeling regions were made months ago (Brian took the lead on that). So we're just using the same regions – and those are the same ones that Nathan's output is relevant to. My intention with this was to try to evaluate whether we should expect the modeling regions to "behave" (in terms of HexSim's estimates of future populations) like the DSAs within them. I don't know for sure, but I'm guessing that we would find similar results, in general, if we had subdivided modeling regions differently. We could in the future check on this by using Ray and Katie's 6 (I believe) modeling regions and do similar comparisons. The bottom line here, to me, is that on average DSAs have better habitat than the regions they are within – and sometimes the differences are fairly large.

I still contend that the modeling is not representing the Olympic Cascades and the Oregon Coast Ranges and their representative DSAs the way we have seen those populations perform in the latest meta-analysis and that could be an important issue in the modeling results being accepted by other scientists. For example, the RHS for the Olympic DSA is 44.7 but the RHS for that zone is 14.4, so it is no wonder the modeling gives a different result. Similarly, the RHS for Tyee DSA is 31.6 but that for the zone is 18.1.

I'm in no position to argue about what is actually going on in these areas. My reading/understanding of the HexSim results is that – over time it predicts the Olympic DSA and Tyee to do very poorly (# owls of course), in part because they exist within regions that have very low average RHS outside of the DSAs. That said, if you believe that the current output is just too pessimistic for those area, then perhaps we should try reducing their scaling factors a bit more (perhaps to 1 instead of 1.25). My guess is that we'll still see a decline, but it certainly won't be as dramatic as what it shows now.

Also, your premise that HexSim predicts that the western Cascades will do better than the eastern Cascades is not supported by the results that Nathan sent this morning. I see just the opposite of that.

Hmmm – I was referencing the West Cascades South – which looks to have a population of ~400 (maybe a bit less) in 150 years, whereas the East Cascades South looks to end up with about 80, and

the East Cascades North ~100 in 150 years. I was just eye-balling these based on the graphs from Beta_A (500 multiplier).

Anyway, I need more clarity and definitions with the table you provided and the crosswalk between DSAs and modeling zones needs to be modified before I can follow your reasoning. At this point, I believe additional refinement in the scaling and delineation of the modeling zones is in order before you and Nathan are ready to turn the modeling over to Craig. Of course, I am only one of several members of this group, so I will step aside if others are not in agreement.

Bob – your input and insights have been and continue to be invaluable to this process. It is very important to me (and I'm guessing the whole group) that you are comfortable with things prior to us going forward.

I am not trying to be argumentative here, just searching for more clarity and good comparisons between the recent meta-analysis results and the modeling results.

Hey, do I detect a subtle mocking here? ☺

Cheers!

Bob